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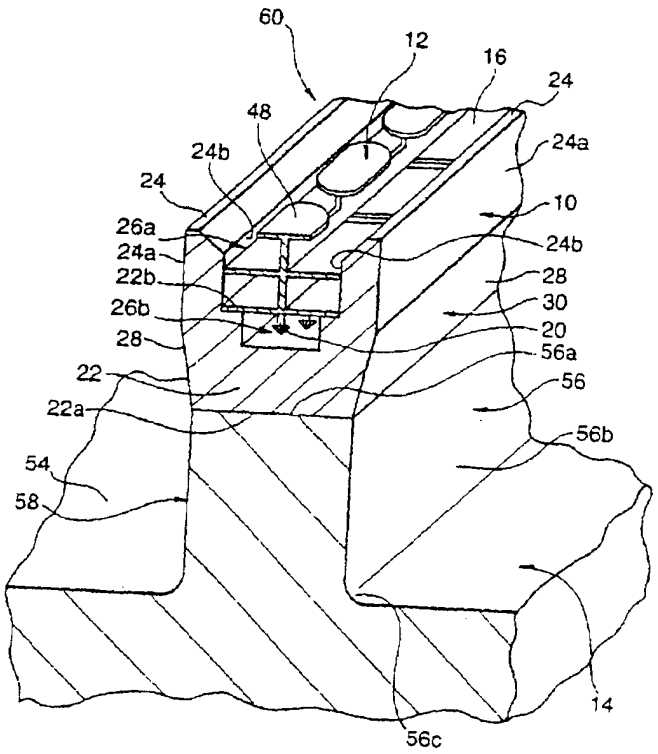

(57) Abstract: To provide a guide and a mold usable for attaching a strip-shaped member to a main molded body, capable of improving the appearance of the main molded body covered with a covering member from the designing point of view. The guide (10) has a generally flat tapered surface (28) between a bottom surface (22a) of a bottom wall part (22) and outer surfaces (24a) of side wall parts (24), extending in the direction crossing both of the bottom surface (22a) and an outer surfaces (22a) at an obtuse angle. In an area on the bottom wall part (22) encircled by the bottom surface (22a) and the tapered surface (28), a reduced thickness portion (30) having a dimension smaller than the maximum distance between outer surfaces (24a) of the pair of side wall parts (24) as measured in the crosswise direction of the groove (26) is formed. A mold (14) includes a pedestal (56) locally protruded from a main molding surface (54). A distance between opposite side surfaces (56b) of the pedestal (56) is substantially the same as the minimum crosswise dimension in the reduced thickness portion (30) of the guide (10). The bottom wall part (22) of the guide (10) is fixed to the pedestal (56) with the bottom surface (22a) being in contact with a top surface (56a) of the pedestal (56).

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GUIDE AND MOULD COMPRISING THAT GUIDE

Field of the Invention

The present invention relates to a guide and a mold used for attaching a strip-shaped member to be integral with a main molded body. The present invention further relates to an assembly of such a guide and a mold.

Background of the Invention

It has been well-known, in an article such as a car seat, an office or domestic chair or a mattress which is provided with a core having cushioning properties, such as a molded body of foamable resinous material and with a soft covering member for covering a surface of the core such as a fabric or a leather, that a face-to-face engagement type fastener member (a so-called surface fastener) having a plurality of engaging elements on one surface of a base thereof is used for firmly attaching the covering member to the core (for example, see Japanese Unexamined Patent Publication (Kokai) No. 9-224720).

Since it is desired to provide a high level comfortability to a user, particularly in the car seat or the chair, a fastener member of an elongate strip shape has recently been often used as fixing means for attaching the covering member to the core, capable of being received within a groove provided on a surface of the core along a seam or others of the covering member. For example, Fig. 9 illustrates a state wherein elongate strip-shaped fastener members 5 are positioned in recesses 4 provided on the surface of a core 3 along seams 2 of a covering member 1 of a car seat. To fixedly install such a strip-shaped fastener member at a desired position on the core surface with the engaging elements thereof exposed outside, an insert molding method is advantageously carried out, wherein the fastener member is disposed as an insert within a mold for the core which is a main molded body so that the fastener member is fixed to the core simultaneously with the molding of the core. For example, Japanese Unexamined Patent Publication (Kokai) No. 2000-317945 discloses a guide for supporting a fastener member within a mold for a core when such an insert molding method is carried out.

The guide described in this publication has one groove capable of removably accommodating a strip-shaped fastener member therein. The groove is formed of a

bottom wall part of the guide and a pair of side wall parts integrally extending upward from the bottom wall part along opposite longitudinal edges thereof. In addition, a sealing section is provided in this guide at each longitudinal end of the groove to prevent a foamable liquid material from invading the inside of the groove during the molding of core.

The guide is secured at a desired position on a molding surface with the bottom wall part thereof being in contact with the molding surface of the core mold. The fastener member is accommodated in the groove with the engaging elements thereof inserted into a space between the pair of side wall parts and the pair of sealing sections of the guide. if the core is molded by pouring the foamable liquid material into a molding cavity of the mold in this state, the fastener member is fixedly secure to a predetermined position on the core surface.

Fig. 10 is an enlarged sectional view of one example of the core 3 attached with the fastener member 5 at a predetermined position of a surface thereof after being subjected to such an insert molding process and the covering member 1 fixedly covering the core 3 via the fastener member 5. There is a loop member 6 having a number of fibrous loops, attached to a portion on a rear surface of the covering member 1 along the seam 2. Part of the covering member 1 along the seam 2 is pressed into the recess 4 formed in the core 3 in correspondence to the contour of the above-mentioned guide, while the loop member 6 engages with the engaging elements of the fastener member 5. In this state, the covering member 1 is fixed to the fastener member 5 provided in the core 3 at a position of the seam 2, so as to cleate a design line extending along the seam 2.

Summary of the Invention

The above-mentioned conventional guide used for integrally attaching the strip-shaped fastener member to the main molded body generally has a contour in which a flat outer surface of the bottom wall part (or a bottom surface of the guide) is orthogonal to a flat outer surface of the respective side wall part. Thus, when the guide is fixed to the molding surface with the outer surface of the bottom wall part being in contact with the molding surface of the mold, the outer surface of the respective side wall part of the guide is disposed to be orthogonal to the molding surface of the mold. If the main molded body is molded with the conventional guide as described above, a recess of a

generally rectangular cross-section is formed on the surface of the main molded body, having a predetermined width in the depthwise direction (a crosswise dimension) in correspondence to the contour of the guide, and the fastener member is fixedly secured to the bottom of the recess. In this regard, the width of the recess corresponds to a distance between the opposite sidewall parts of the guide, and the depth of the recess corresponds to a height of the guide.

As described before, if the seam portion of the covering member is pressed into the recess and fixed to the fastener member to cover the main molded body with the covering member, the seam portion of the covering member enters the recess while gradually curving as shown in Fig. 10 because the width of the recess is constant in the depthwise direction and the depth of the recess is relatively shallow. As a result, an article in which the main molded body is covered with the covering member may have a relatively poor appearance from the designing point of view even in the design line extending along the seam portion of the covering member, and the seam is liable to grin particularly when the tension is applied to the covering member to deteriorate the appearance.

An object of the present invention is to provide a guide, a mold and an assembly thereof usable for integrally attaching a strip-shaped member to a main molded body, wherein the appearance of an article obtained by covering the main molded body with a covering member via the strip-shaped member is improved from the designing point of view.

In one aspect of the present invention, a guide is provided comprising a bottom wall part, a pair of side wall parts extended from the bottom wall part and a groove defined by the bottom wall part and the side wall parts, wherein a strip-shaped member is detachably accommodated in the groove. The bottom wall part comprises a reduced thickness portion having a dimension smaller than the maximum distance between outer surfaces of the pair of side wall parts as measured in the crosswise direction of the groove.

It can be desirable for a bottom surface of the guide to be formed in the reduced thickness portion. It can also be desirable for a tapered surface to be formed between the bottom surface of the reduced thickness portion and an outer surface of at least one of the side wall parts, and extends at an obtuse angle relative to the bottom surface.

In another aspect of the present invention, an assembly is provided comprising a mold having a main molding surface and a guide fixedly installed on the main molding surface of the mold, wherein the guide comprises a bottom wall part, a pair of side wall parts extended from the bottom wall part and a groove defined by the bottom wall part and the pair of side wall parts, the mold has a pedestal locally projected from the main molding surface to be adjacent to the guide so that the bottom wall part of the guide is fixed to the pedestal, and the pedestal includes a reduced thickness portion wherein a dimension is smaller than the maximum distance between outer surfaces of the pair of side wall parts as measured in the crosswise direction of the groove.

It can be desirable for the mold to have a main molding surface and a guide portion formed on the main molding surface, wherein the guide portion comprises pedestal locally projected from the main molding surface, a pair of side wall parts extended from the pedestal and a groove defined between the pair of side wall parts, and the pedestal includes a reduced thickness portion wherein a dimension is smaller than the maximum distance between outer surfaces of the pair of side wall parts as measured in the crosswise direction of the groove.

Brief Description of the Drawings

Fig. 1 is a partially broken perspective view of a guide according to one embodiment of the present invention, also showing a fastener member to be supported thereby.

Fig. 2 is a sectional perspective view of part of an assembly according to one embodiment of the present invention, wherein a mold provided with the guide shown in Fig. 1, with a fastener member accommodated in the guide.

Fig. 3 is an enlarged sectional view of a main molded body molded by using the assembly shown in Fig. 2, showing a portion to which the fastener member is attached.

Fig. 4 is an enlarged sectional view showing a state wherein the main molded body shown in Fig. 3 is covered with the covering member.

Fig. 5 is a sectional perspective view showing part of a guide according to another embodiment of the present invention together with a mold.

Fig. 6 is a sectional perspective view showing part of a guide according to a further embodiment of the present invention together with a mold.

Fig. 7 is a sectional perspective view showing part of an assembly according to a still further embodiment of the present invention.

Fig. 8 is a sectional perspective view showing part of an assembly according to a furthermore embodiment of the present invention.

Fig. 9 is a schematic perspective view of a car seat to which the present invention is applicable.

Fig. 10 is an enlarged sectional view of the car seat shown in Fig. 9, showing a portion to which the fastener member is attached in a conventional manner.

Detailed Description of the Invention

The present invention will be described in more detail below with reference to the preferred embodiments illustrated in the attached drawings wherein common reference numerals are used for denoting the same or similar components.

Fig. 1 shows a guide 10 and a fastener member 12 supported by the guide 10 according to one embodiment of the present invention. Fig. 2 shows a mold 14 with the guide 10 supporting the fastener member 12 being fixedly installed at a predetermined position thereof. The fastener member 12 is of a face-to-face engagement type having a flexibility conformable to a three-dimensional surface of the main molded body, and provided as described later with a strip-shaped base 16 and a plurality of engaging elements planted on a first surface 18 of the base 16 at a predetermined pitch. Note that the guide according to the present invention is also applicable to various strip-shaped members including other types of fastener members than the illustrated one.

The guide member 10 is a rod-like block body for supporting the fastener member 12 of a desired length, and includes a bottom wall part 22 and a pair of side wall parts 24 integrally extending from the bottom wall part 22 along opposite longitudinal edges thereof. The bottom wall part 22 and the pair of side wall parts 24 defines one groove 26 substantially all over the length of the guide 10, capable of detachably accommodating the fastener member 12 in substantially a stretched state (or a non-wound or non-folded state).

The bottom wall part 22 of the guide 10 has a generally flat, rectangular outer surface 22a and an inner surface 22b with curved longitudinal end regions, wherein the outer surface 22a constitutes a bottom surface of the guide 10 (hereinafter referred to as a

bottom surface 22a). The respective side wall part 24 has an outer surface 24a of a generally flat rectangular shape extending generally orthogonal to the bottom surface 22a of the bottom wall part 22 and an inner surface 24b of a generally flat rectangular shape extending generally orthogonal to the inner surface 22b of the bottom wall part 22. The outer surfaces 24a of these side wall parts 24 are disposed in the longitudinal direction opposite and parallel to each other at a distance between the both, while the inner surfaces 24b are disposed in the longitudinal direction opposite and parallel to each other at a distance between the both.

The inner surface 22b of the bottom wall part 22 has regions of a predetermined length at opposite longitudinal ends, respectively, and regions of a predetermined width adjacent to the opposite inner surfaces 24b of the side wall parts, respectively, so that a recess 26b encircled by these regions is defined to constitute part of the groove 26. That is, the groove 26 is functionally divided into a first part 26a (for accommodating the base 16 of the fastener member 12) defined between the inner surfaces 24b of the opposite side wall parts 24 above the inner surface 22b of the bottom wall part 22, and a second part 26b (for accommodating the plurality of engaging elements 20 of the fastener member 12) recessed in the predetermined area of the inner surface 22b of the bottom wall part 22.

A distance between the inner surfaces 24b of the pair of side wall parts 24 (or a crosswise dimension of the first part 26a of the groove 26) is selected to be substantially equal to a width or a crosswise dimension of the base 16 of the fastener member 12 to be supported. Thus, when the fastener member 12 is properly accommodated in the groove 26 of the guide 10, the inner surface 24b of the respective side wall part 24 is in close contact with a longitudinal side edge of the base 16 of the fastener member 12 accommodated in the first part 26a of the groove 26. On the other hand, the inner surface 20b of the bottom wall part 22 abuts to the vicinity of the opposite longitudinal ends and the vicinity of the opposite side edges of the first surface 18 of the base 16 of the fastener member 12 accommodated in the first part 26a of the groove 26. In such a manner, the guide 10 frictionally holds the fastener member 12 at a predetermined posture with the plurality of engaging elements 20 of the fastener member 12 accommodated in the second part 26b of the groove 26 and with the base 16 fit into the first part 26a of the groove 26. As a result, it is possible to prevent a liquid material from invading the second

part 26b of the groove 26 when the main molded body is molded while holding the fastener member 12 in the guide 10.

The guide further includes, between the bottom surface 22a of the bottom wall part 22 and the outer surfaces 24a of the side wall parts 24, a generally flat tapered surface 28 extending in the direction crossing both of the bottom surface 22a and the outer surface 24a at an obtuse angle. In the bottom wall part 22, there is a reduced thickness portion 30 in an area encircled by the bottom surface 22a and the tapered surface 28, wherein a dimension measured in the direction transverse to the groove 26 (hereinafter referred to as a crosswise dimension of the bottom wall part 22) is smaller than the maximum distance between the outer surfaces 24a of the opposite side wall parts 24. In the illustrated embodiment, the pair of tapered surfaces 28 extend at the same angle relative to the bottom surface 22a of the bottom wall part 22. Thus, the reduced thickness portion 30 of the bottom wall part 22 is imparted with substantially a symmetric shape relative to a longitudinal center line of the guide 10, wherein the bottom surface 22a of the bottom wall part 22 has the minimum crosswise dimension in the reduced thickness portion 30.

While the above description has been made on the guide 10 having a substantially linearly extending shape, the guide 10 should not be limited thereto but may have various three-dimensional shapes so that the fastener member 12 can be installed along the seam of the covering member for the core extending in the three-dimensional manner as when the fastener member 12 is fixed to the core of the car seat. The guide 10 may be formed as a one-piece body, for example, through the cutting operation of a rod-like metallic stock such as aluminum, aluminum alloy or iron.

The fastener member 12 which is one example of strip-shaped members to be accommodated in the guide 10 is constituted by a plurality of boxes 32 arranged at a space in the longitudinal direction and joints 34 for coupling the boxes 32 with each other to form a one-piece body. Each of the boxes 32 is of substantially a hollow structure including flat upper and lower plates 36, 38 extending generally parallel to each other, a pair of side plates 40 coupling the upper and lower plates with each other, and a partition 42 extending in the longitudinal direction between these plates 36, 38 and 40. Each of the plurality of engaging elements 20 includes a leg 44 extending upright from the upper plate 36 of the box 32 and a plurality of engagement projections 46 laterally swollen in

the distal end portion of the leg 44 to be detachably engaged with a corresponding engaging element of a mating member. In this regard, a box 32'disposed at a longitudinal end has no engaging element 20.

A slit 48 extending in the crosswise direction is formed in the lower plate 38 of the box 32 generally at a longitudinal center thereof. Also, a rib 50 extends all over the base 16 on the lower plate 38 in the longitudinal direction while crossing the slit 48. Thin-walled anchors 52 extending generally parallel to the lower plate 38 are formed in the rib 50 so that two of them are distributed to every box 32. The rib 50 and the anchor 52 are coupling elements to be embedded in the main molded body via the insert molding process described later to constitute a mechanical joint of the fastener member 12 to the main molded body.

The fastener member 12 of such a structure can relatively easily flex the base 16 as a whole in the horizontal direction or the direction parallel to the first surface 18 due to the stress distributing action in the respective box 32 of a hollow structure. Also, due to the hinge action of the thin-walled joint 34, the base 16 is relatively easily flexible as a whole in the vertical direction or the direction orthogonal to the first surface 18. As described above, since the base 16 is easily flexible either in the horizontal direction or in the vertical direction, the fastener member 12 can be installed at a desired surface position of an article having various three-dimensional surfaces so that the base 16 accurately conforms therewith. The fastener member 12 is preferably formed of resinous material such as nylon, polyethylene or polypropylene as a one-piece body.

As shown in Fig. 2, the mold 14 in which the guide 10 of the above-mentioned structure is installed at a predetermined position includes a main molding surface 54, for example, for molding the core (or a cushion) of the car seat from foamed resinous material, and a pedestal 56 locally protruded from the main molding surface 54. The pedestal 56 has the same length and curvature as those of the guide 10 to be installed and a desired height from the main molding surface 54.

The pedestal 56 includes a top surface 56a of substantially the same flat rectangular shape as in the base surface 22a of the guide 10 and a pair of side surfaces 56b of generally flat rectangular shape extending generally in the direction orthogonal to the top surface 56a. Each of the side surfaces 56b of the pedestal 56 is smoothly connected to the main molding surface 54 via an arcuate surface 56c to define

an auxiliary molding surface of the mold 14 together with the arcuate surface 56c. A distance between the side surfaces 56b of the pedestal 56 is substantially the same as the minimum crosswise dimension in the reduced thickness portion 30 of the guide 10. That is, the pedestal 56 has a reduced thickness portion 58 in which a dimension measured in the direction crossing the groove 26 of the guide 10 (hereinafter referred to as a crosswise dimension of the pedestal 56) is smaller than the maximum distance between the outer surfaces 24a of the opposite side wall parts 24.

On the pedestal 56 of the mold 14, the bottom wall part 22 of the guide 10 is fixed by means of known fixing means such as putty, bolt or magnet with the bottom surface 22a being in contact with the top surface 56a of the pedestal 56. In this state, each of the tapered surfaces 28 of the guide 10 is smoothly connected to the corresponding side surface 56b of the pedestal 56 in a stepless manner. The mold 14 in which the guide 10 is fixedly installed on the pedestal 56 in such a manner constitutes an assembly 60 according to one embodiment of the present invention. If the guide 10 has a desired three-dimensional curved configuration, the pedestal 56 also has a three-dimensional curved configuration corresponding thereto.

When the main molded body (for example, a core for a car seat) is molded by using the assembly 60 of the above structure, while using the fastener member 12 as an insert, the operator first properly positions the fastener member 12 in the guide 10 fixed to the pedestal 56 of the mold 14. At this time, the plurality of engaging elements 20 of the fastener member 12 are accommodated in the second part 26b of the groove 26 of the guide 10, and the base 16 is accommodated in the first part 26a of the groove 26 with the side edges of the box 32 extending in the longitudinal direction and surface portions of the upper plate 36 in the vicinity of the side edges thereof being in contact with the inner surface 22b of the bottom wall part 22 of the guide 10. Particularly, in the boxes 32' disposed at the opposite longitudinal ends of the fastener member 12, the surface of the upper plate 36 thereof is in close contact with the inner surface 22b of the bottom wall part 22 of the guide 10.

In this state, molten resinous material (for example, foamable liquid resinous material such as polyurethane) is supplied into a molding cavity defined by the main molding surface 54 and the auxiliary molding surface of the mold 14, so as to obtain the main molded body. Upon the completion of the molding of the main molded body, the

fastener member 12 is fixedly coupled to a predetermined position on the surface of the main molded body with the plurality of engaging elements exposing outside.

Fig. 3 is an enlarged sectional view of a core 62 molded as one example of the main molded body through the above insert molding process using the assembly 60, showing a manner in which the fastener member is attached. The core 62 has a recess 64 at a predetermined position on a surface 62a thereof provided in correspondence to the guide 10 and the pedestal 56, and the fastener member 12 is fixedly mounted to a bottom 64a of the recess 64. The fastener member 12 is located so that the plurality of engaging elements 20 projected from the box 32 of the base 16 are disclosed in the interior of the recess and the box 32 and the anchor 52 of the base 16 are embedded in the core 62.

The recess 64 formed in the core 62 has a pair of side surfaces 64b having a configuration and dimensions in correspondence, respectively, to those of the outer surfaces 24a of the opposite side wall parts 24, the opposite tapered surfaces 30 of the bottom wall part 22 of the guide 10 and the opposite side surfaces 56b of the pedestal 56 of the mold 14 (see Fig. 2). A width of the recess 64 or a distance between the opposite side surfaces 64b corresponds, in the lowermost area of the recess 64 or a portion adjacent to the fastener member 12, to a distance between the outer surfaces 24a of the side wall parts 24 of the guide 10; in a middle portion directly above the former, to a distance between the tapered surfaces 30 of the bottom wall part 22; and in the uppermost portion directly above the former, to a distance between the side surfaces 56b of the pedestal 56. Accordingly, the recess 64 has a configuration wherein a width or a crosswise dimension increases stepwise from the surface 62a of the core 62 as seen in the depthwise direction. In this regard, an edge surface 64c having an arcuate cross-sectional shape is formed in an opening of the recess 64, in correspondence to the arcuate surface 56c provided at a proximal end of the pedestal 56 of the mold 14. A depth of the recess 64 corresponds to a total height of the pedestal 56 and the guide 10 on the molding surface 54 of the mold 14.

Fig. 4 is an enlarged sectional view of one example of the core 62 wherein the fastener member 12 is attached to the recess 64 provided at a predetermined position of a surface thereof after being subjected to such an insert molding process and the covering member 66 fixedly covering the core 62 via the fastener member 12. There is a loop

member 70 having a number of fibrous loops, attached to a portion on a rear surface of the covering member 66 along the seam 68. Part of the covering member 66 along the seam 68 is pressed into the recess 64 formed in the core 62 so that the loop member 70 engages with the engaging elements 20 of the fastener member 12. In this state, the covering member 66 is fixed to the fastener member 12 provided in the core 62 at a position of the seam 68. It should be noted that the covering member 66 is not restricted to the single layer structure as illustrated, but may have a multi-layer structure. Also, two covering members 66 having different properties can be used and joined via the seam 68.

The seam portion 68 of the covering member 66 is pressed into the recess 64 to be attached to the fastener member 12 so that the core 62 is covered with the covering member 66 in such a manner. Since a width of the recess 64 increases stepwise in the depthwise direction (or reduces toward the opening) unlike the conventional structure shown in Fig. 10, as well as a depth of the recess 64 is sufficiently large, the portion including the seam 68 of the covering member 66 enters the recess 64 while relatively sharply curving. As a result, an article in which the core 62 is covered with the covering member 66 (such as a car seat) has an appearance deep in shade in the portion including the seam 68 (or the design line) of the covering member 66, providing a high level design rich in three-dimensional feeling. Furthermore, since the seam 68 of the covering member 66 is linearly pushed in the recess 64 having a sufficient depth without causing a distortion, it is possible, even if a tension is applied to the covering member 66, to prevent the appearance from deteriorating due to the grinning of the seam 68.

While the combination of dimensions in the guide 10, the mold 14 and the assembly 60 of the above-mentioned structure may vary in accordance with a dimension of the fastener member 12, a thickness and a drape of the covering member 66 for the core 62, typically the following range is preferable. For example, when a crosswise dimension of the base 16 of the fastener member 12 is approximately 8.5 mm and a thickness of the covering member 66 is approximately 5 mm, the typical combination of dimensions is such that the maximum distance between the outer surfaces 24a of the side wall parts 24 in the guide 10 is approximately 12 mm, a crosswise dimension of the bottom surface 22a of the bottom wall part 22 and of the pedestal 56 of the mold 14 are approximately 10 mm, a total height of the pedestal 56 and the guide 10 on the molding surface 54 is in a range from approximately 15 mm to 30 mm, and a taper angle of the

tapered surface 28 relative to the bottom surface 22a of the guide 10 is in a range from approximately 95 to 120 degrees. In this regard, the reduced thickness portion 30 is not limited to the pair of symmetrically tapered surfaces 28 but includes a pair of asymmetrically tapered surfaces or a single tapered surface formed on one of the side wall parts 24. Also, the tapered surface is not restricted to the flat surface, but may be formed as a curved surface.

A guide, a mold and an assembly thereof according to the present invention may have various embodiments other than those described above.

For example, as shown in Fig. 5, a guide 80 may be provided wherein the reduced thickness portion 30 of the bottom wall part 22 has outer surface portions 30a extending from the lower end of the pair of tapered surfaces 28 generally parallel to the outer surfaces 24a of the side wall parts 24. In this embodiment, the bottom surface 22a of the guide 80 is formed on the end surface of the reduced thickness portion 30 in a prolonged bottom wall part. Because the reduced thickness portion 30 is prolonged, a height of the pedestal 56 in the mold 14 becomes lower.

As shown in Fig. 6, a guide 82 may be provided, wherein the pedestal 56 of the mold 14 shown in Fig. 2 is replaceable as a whole with the reduced thickness portion 30. In this case, the base surface 22a of the guide 82 may not be contained in the reduced thickness portion 30 (that is, the crosswise dimension of the bottom surface 22a does not become smaller than the maximum distance between the outer surfaces 24a of the side wall parts 24).

Further as shown in Fig. 7, a guide 84 may be provided, wherein tapered surfaces 84 corresponding to the tapered surfaces 28 of the above guide 10 are formed in the pedestal 56 itself extended from the molding surface 54. In this case, the reduced thickness portion 58 of the pedestal 56 in the mold 86 is formed between the tapered surface 84 and the molding surface 54. According to such a structure, it is possible to achieve the equivalent effect to that of the guide 10 by using the prior art guide 88 having no reduced thickness portion.

As shown in Fig. 8, a mold 92 may be provided, wherein a guide portion 90 of the same structure as in the guide 10 is formed on the main molding surface 54. In this case, the guide portion 90 includes a pedestal 56 locally extended from the main molding surface 54, a pair of side wall parts 94 projected from the pedestal 56, and a groove 96

formed between the side wall parts 94. The pedestal 56 has tapered surfaces 98 beneath outer surfaces 94a of the side wall parts 94, respectively, and a reduced thickness portion 58 is provided between the tapered surfaces 98 and the molding surface 54, having a crosswise dimension smaller than the maximum distance between outer surfaces 94a of the opposite side wall parts 94.

As apparent from the above description, according to the present invention, a guide, a mold and an assembly thereof are provided, which is used for attaching a strip-shaped member to a main molded body and capable of improving the appearance from the designing point of view when the main molded body is covered with a covering member via the strip-shaped member.

We claim:

1. A guide comprising a bottom wall part, a pair of side wall parts extending from the bottom wall part and a groove defined by the bottom wall part and the side wall parts, wherein a strip-shaped member is detachably accommodated in the groove, characterized in that:

the bottom wall part includes a reduced thickness portion having a dimension, as measured in a direction transverse to the groove, smaller than a maximum distance between outer surfaces of the pair of side wall parts.

2. A guide as defined by claim 1, wherein a bottom surface of the guide is formed in the reduced thickness portion of the bottom wall part.

3. A guide as defined by claim 2, wherein a tapered surface is formed between the bottom surface of the reduced thickness portion and an outer surface of at least one of the side wall parts, the tapered surface extending in a direction crossing at an obtuse angle to the bottom surface.

4. An assembly comprising a mold having a main molding surface and a guide fixedly installed on the main molding surface of the mold, wherein:

the guide comprises a bottom wall part, a pair of side wall parts extending from the bottom wall part and a groove defined by the bottom wall part and the pair of side wall parts;

the mold includes a pedestal locally projecting from the main molding surface and adjacent to the guide, the bottom wall part of the guide being fixed to the pedestal; and

the pedestal includes a reduced thickness portion having a dimension, as measured in a direction transverse to the groove, smaller than a maximum distance between outer surfaces of the pair of side wall parts.

5. A mold comprising a main molding surface and a guide portion formed on the main molding surface, wherein:

the guide portion includes a pedestal locally projecting from the main molding surface, a pair of side wall parts extending from the pedestal and a groove defined between the pair of side wall parts; and

the pedestal includes a reduced thickness portion having a dimension, as measured in a direction transverse to the groove, smaller than a maximum distance between outer surfaces of the pair of side wall parts.

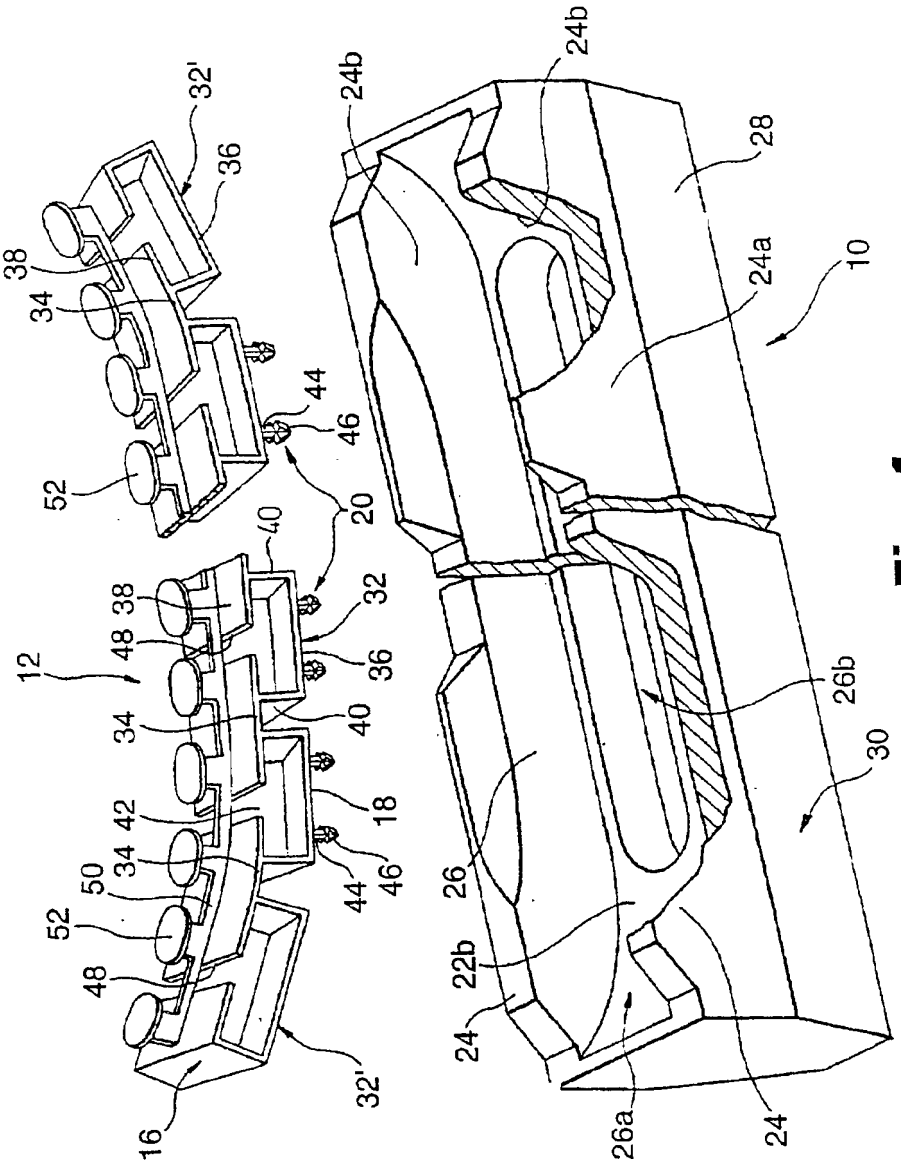

Fig. 1

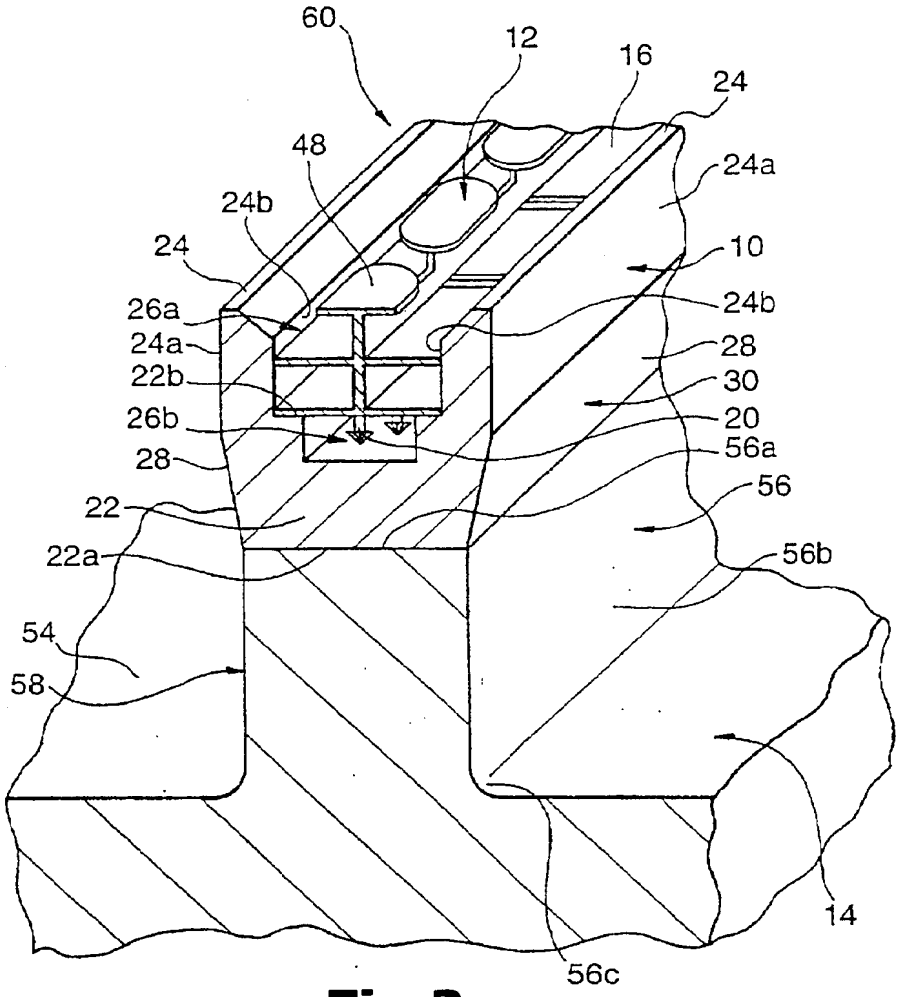
60
12
16
24
48
24a
24b
10
24
24b
26a
28
24a
30
22b
20
26b
56a
28
56
22
56b
22a
54
58
14
56c

Fig.2

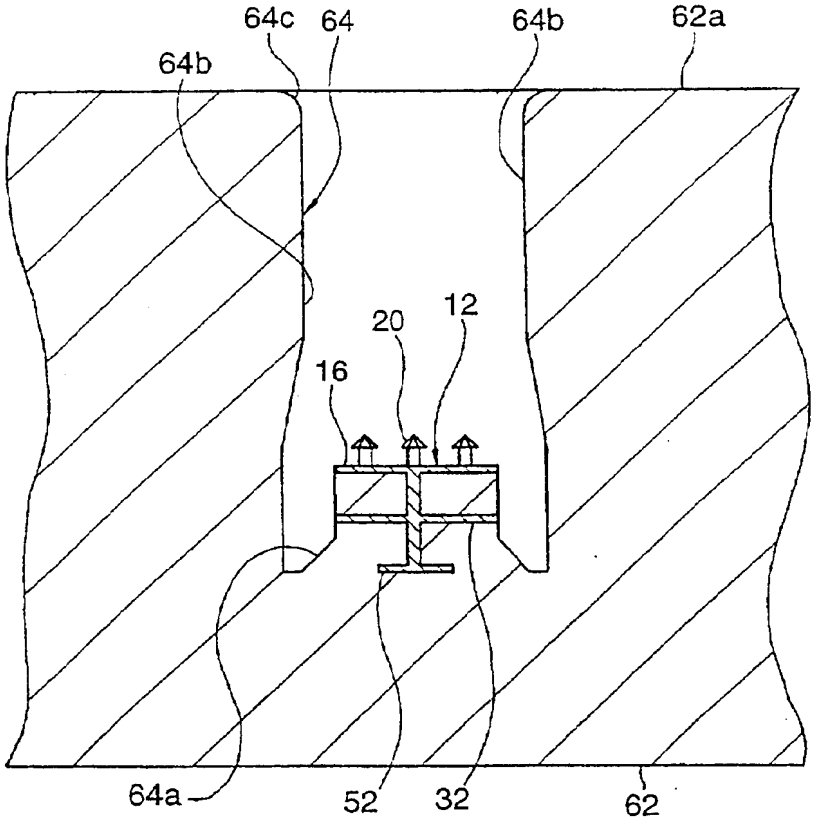

Fig. 3

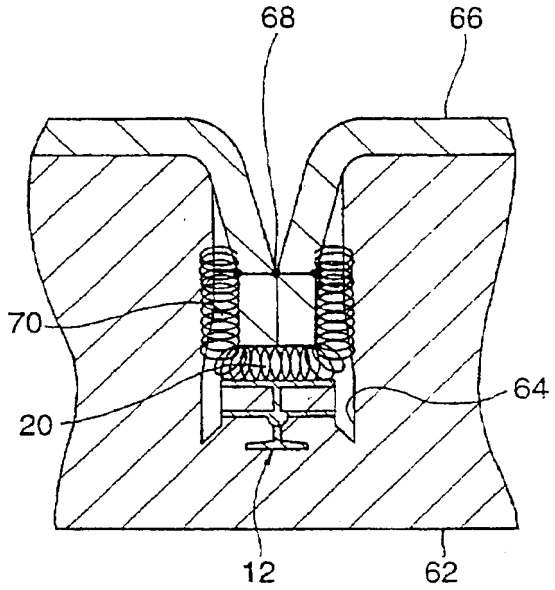

Fig. 4

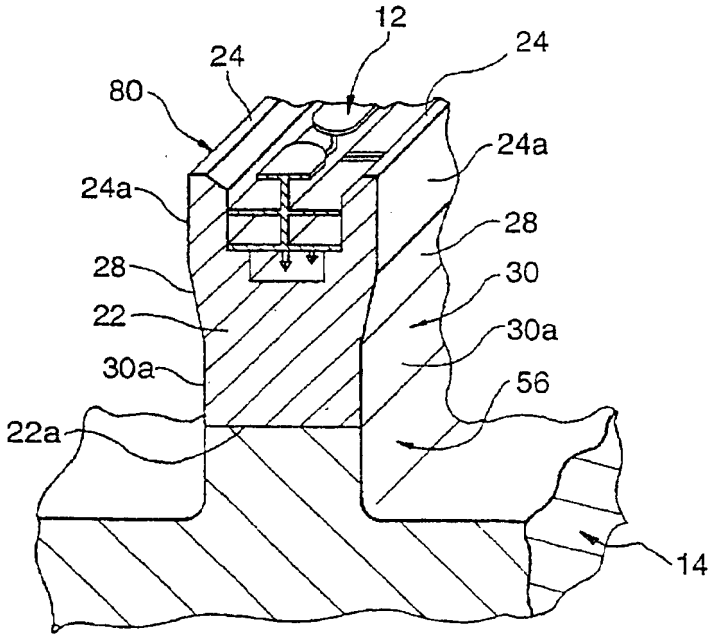

Fig. 5

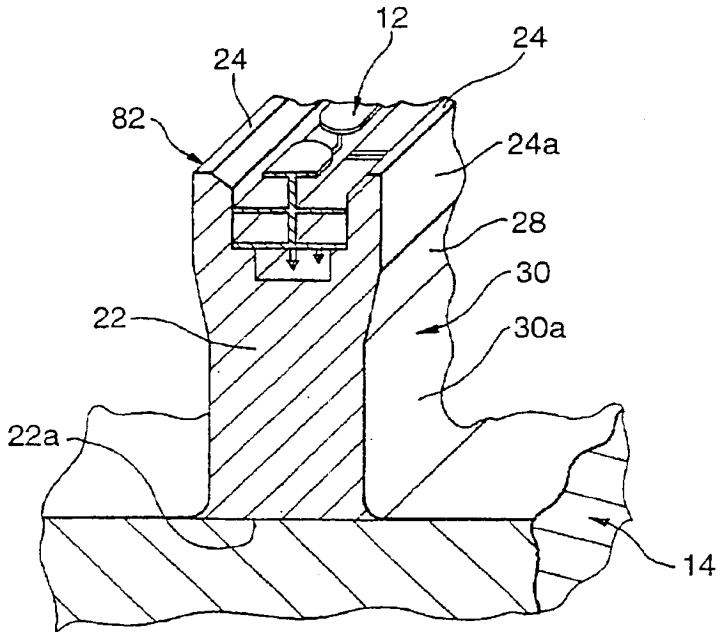

Fig. 6

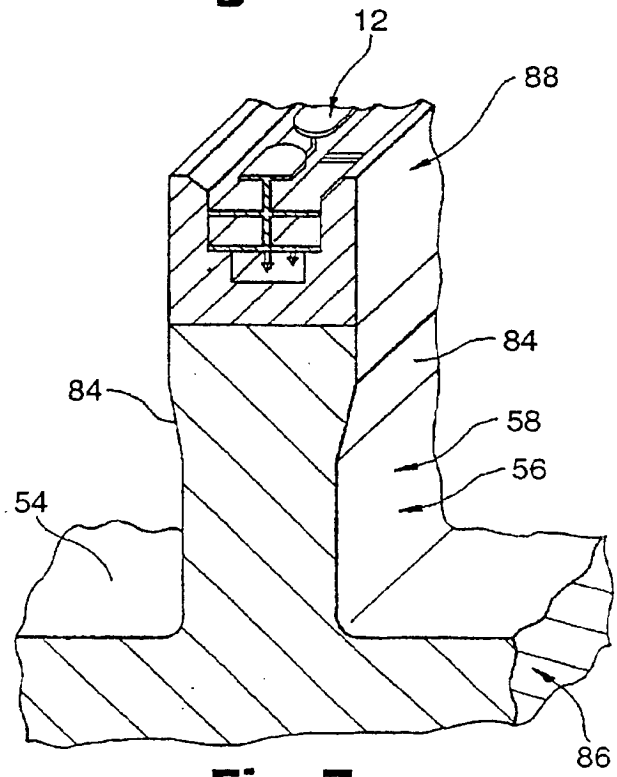

Fig. 7

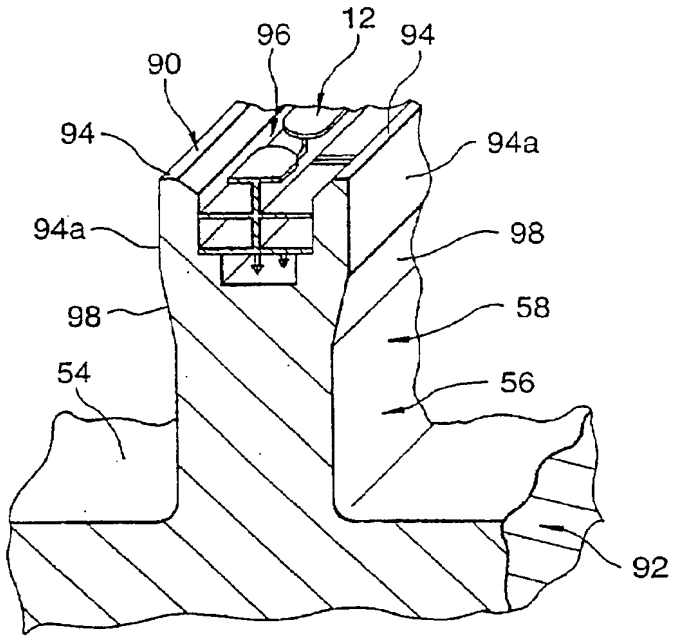

Fig. 8

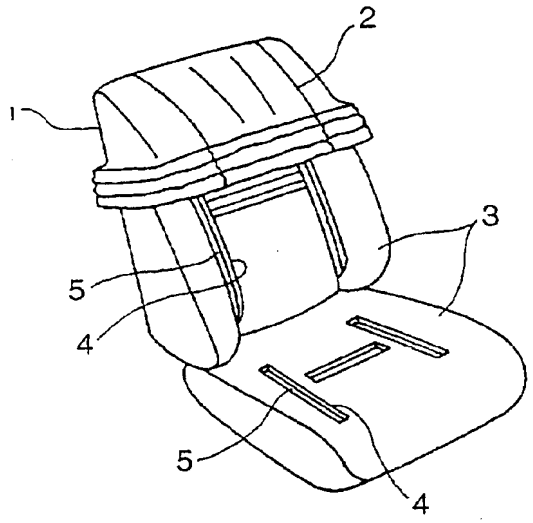

Fig. 9

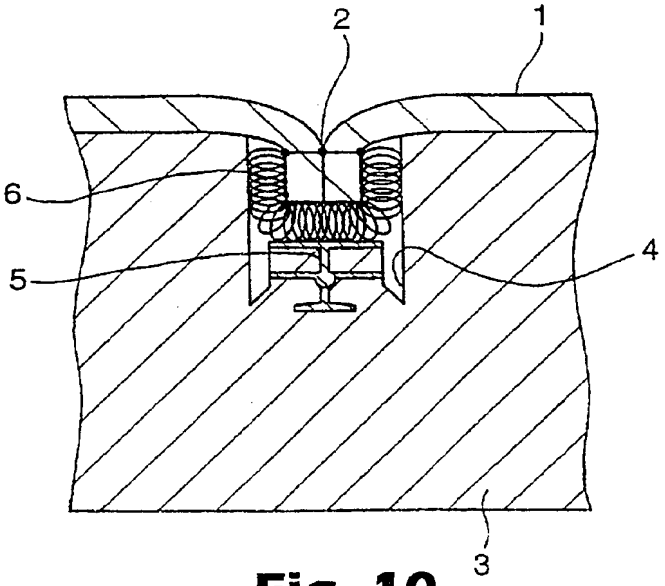

Fig. 10

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 02/13097

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B29C33/12 B60N2/58 A47C31/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B29C B60N A47C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01 24665 A (JOHNSON CONTROLS GMBH & CO KG ;ERLER ANDREAS (DE); STEINMEIER HORS) 12 April 2001 (2001-04-12) figure 3	1
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 01, 31 January 2000 (2000-01-31) & JP 11 276735 A (IKEDA BUSSAN CO LTD), 12 October 1999 (1999-10-12) abstract; figure 2	1-5
A	PATENT ABSTRACTS OF JAPAN vol. 018, no. 650 (M-1719), 9 December 1994 (1994-12-09) & JP 06 254268 A (BRIDGESTONE CORP), 13 September 1994 (1994-09-13) abstract; figure 7	1-5

-/—

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 August 2002	30/08/2002

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Kujat, C

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INTERNATIONAL SEARCH REPORT

Inte nal Application No
PCT/US 02/13097

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
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			FR	2777879 A1	29-10-1999

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